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ABSTRACT

This study examines the relationship between covert decisions by teachers and classroom behavior. The decisions of 12 classroom teachers were analyzed through stimulated recall and content analysis techniques. Results indicate that there is a clear and powerful relationship between thought and action. A majority of covert decisions led to immediate action in the classroom. Hypotheses for future research were generated. (Author/JD)

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AN EXPLORATION OF THE RELATIONSHIP
BETWEEN TEACHER THOUGHT PROCESSES AND BEHAVIOR

by

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Introduction

There is an increasingly abundant empirical research base for the examination of teacher thought processes. (MacKay & Marland, 1978; Clark & Peterson, 1976; Kagan, Krathwohl, Goldbert & Campbell, 1967; Marland, 1977; Peterson, Marx & Clark, 1978; Shavelson, Cadwell & Izu, 1977). Stimulated recall techniques have used overt classroom behavior as a basis for obtaining retrospective data on thought processes, decision-making, and underlying psychological principles (Conners, 1978). One of the crucial methodological and practical questions concerns the relationship between covert mental processes and observable behaviors, between teacher thoughts and classroom interaction. The study described in this paper is very much an exploratory, preliminary, attempt to find some answers to this critical question. As will be seen, the study is, itself, plagued by several important methodological problems and should be treated as a highly interpretative piece of work. It raises some questions and provides some potentially interesting leads about the thought-action link. At this stage in the research program of which this study is one small component, the questions suggested by this study may not yet be sufficiently well formulated to lead to more rigorous research. They may, however, suggest further enquiry, from a grounded theory (Glaser & Strauss, 1967) perspective, that would lead fairly directly into hypothesis testing.

Procedure

In 1975, a program of research on teaching got underway at the University of Alberta (MacKay, 1977, 1978). One segment of what later became known as the "phase one" studies was an examination of teacher interactive thought processes (MacKay & Marland, 1978). During the school year 1976-77, a second phase was designed to replicate some parts of the phase one studies (Eggert, 1977; Fasano, 1977; Mahen, 1977; Marland, 1977; Muttart, 1977) and to explore some methodological issues.

An initial attempt to recruit volunteer teachers in various grades of the elementary school produced some 60 such volunteers. However, limitations on resources led to a deliberate reduction to a sample size of twelve. The twelve teachers agreed to participate in the study with the understanding that data gathered in their classrooms would be reported back to them at the conclusion of the study.

Accordingly, the following kinds of data were obtained:

1. Stimulated recall data, including pre and post-lesson interviews.
2. Data on the behavior of pupils; the CASES system developed by Spaulding (1973) was used for this purpose.
3. Dyadic interaction between teacher and pupils; the Brophy & Evertson system (1973) was used.
4. Eight high inference measures of teacher behavior including four classroom management behaviors of the type described by Kounin (1970), two interpersonal behavior variable measures which had been developed in the 1975-76 studies, and two variables measuring clarity and persuasiveness, which had also been used in phase one and which represented, in a limited way, a subset of the "promising" variables reported by Rosenshine and Furst (1971).

In the examples to be discussed in this paper, the dyadic interaction data and stimulated recall data were both obtained from a particular lesson, by two independent data collectors. Therefore, the four case studies selected for the main body of the paper represent four separate lessons during each of which a dyadic interaction coder observed and recorded all the behaviors which the system is designed to collect, and, at the same time, a stimulated recall researcher videotaped the lesson. The same stimulated recall researcher had, earlier, conducted a pre-lesson interview to obtain teacher intentions and, later, conducted the post-lesson interview and the stimulated recall interview.

It might be noted that for many of the lessons involving the classrooms in the 1977 study, a set of complete data using the dyadic interaction system, CASES, the high-inference variables, and the stimulated recall data were collected. In addition, in six instances, two videotape cameras were also used to obtain a record of the entire lesson. The findings involving these other data sets will not be reported in this paper; its focus will be only on the relationship between dyadic interaction data and stimulated recall data.

The stimulated recall researchers had undergone fairly extensive training through a series of pilot studies and exposure to the available literature on stimulated recall research, interviewing techniques, and involvement as intercoder reliability checkers with Marland's part of the phase one studies. The dyadic interaction coders had undergone extensive training both on campus and in pilot classrooms and, by the time the data reported here had been collected, had

achieved interrater reliability coefficients ranging from 67% to 95%.

The data, by the way, were collected during the months of February to April, 1977 in classrooms in a large urban school district in a western province of Canada.

Overview of the Case Studies

To develop each of the four case studies the following procedure was used:

The dyadic interaction data had been analysed in terms of frequency of occurrence of each behavior in the category system. Because the frequency of occurrence of a number of the behaviors was low for any one lesson observed, an arbitrary cut-off percentage point was chosen so as to highlight what are identified in this paper as "salient" behaviors. Any behavior representing 2.0% or more of the total observed behaviors was thus classified as a salient behavior.

This short list of salient behaviors was examined by the investigator in much the same way that a list of items which load significantly on a test factor are examined to determine what, if any, psychological meaning the factor may have. This examination, which is a limited example of content analysis, led to a "thumbnail sketch" of the most striking features of the teacher's classroom behavior. For example, if the dyadic interaction system categories under the general heading of "sustaining feedback" were salient, the thumbnail sketch would include a term such as "high degree of sustaining feedback".

Following this, the stimulated recall and pre and post-lesson interview transcripts were read with the following question in mind: what evidence is to be found in the interactive thoughts or in the pre and post-lesson interviews which would be congruent with or incompatible with the salient observed behaviors? Excerpts from the set of teacher comments provided the information needed to answer this question. In the absence of any external criteria for drawing conclusions, the investigator attempted to arrive at a tentative conclusion regarding the congruency of compatibility between thought and action.

(Note: For a full description of stimulated recall methodology, consult, for example, MacKay & Marland, 1978.)

Methodological problems. The most obvious flaw in the approach described above is that the same investigator examined both data sources and in a particular order, viz. the behavioral data were examined first, the thumbnail sketch was made, and, then, the thought process data were examined in order to corroborate, or not, the behavioral data. Clearly, the order might have been reversed, or varied. A data-based system of categories for content analysis might have been developed and used; but, instead, an ad hoc approach was used. Perhaps the main stabilizing influence was the use of the Brophy & Evertson categories as a basis for the behavioral analysis which in their own way provided an a priori structure for the content analysis of the stimulated recall data.

One facet of the methodological problem was the difficulty of defining congruence and incompatibility. Since any traces, however faint, of thoughts or comments which would agree with observed behavior might be used to support a congruency conclusion, the implied null hypothesis (i.e. of incompatibility) was likely to be rejected.

If one is looking for positive evidence in the interview transcripts, how did one structure the search for negative evidence? A possible answer lay in an assumption that all relevant interview data will be considered in the decision about congruence versus incompatibility. This meant that once the thumbnail sketch had been derived from the observational data, any teacher thoughts which appeared to be relevant to these salient behaviors would be used in arriving at a tentative conclusion. This should have enabled both positive and negative instances to be considered on an equal basis.

For example:

If the dyadic interaction data showed a high percentage of criticism, terminal feedback and teacher failure to accept relevant comments from pupils, and, if the stimulated recall data included comments such as:

When pupils were criticized:

"I think these poor kids need all the help and support they can get from the school."

When terminal feedback was given:

"I thought that this was a good way of helping these low ability pupils to enjoy some feelings of success."

When pupil contributions were not accepted:

"I like to involve pupils. My classroom operates on democratic principles."

Clearly, these three exaggerated examples add up to a conclusion of incompatibility between thought and action.

The example given above is intended to illustrate how the investigator intended to ensure that some fair rules for decision-making would prevail.

So, the case studies reported below are presented with their methodological scars in full public view. In each case, a fictitious first name is used to label the teacher; the presentation begins with a summary of the observational data, i.e. the "thumbnail sketch", and then examines excerpts from the stimulated recall and related interviews. Finally, in each case, a summative statement about the relationships between thought and action is made.

Case Study 1 -- Alex

An examination of the observational data collected in Alex's class suggests three main points: (1) that there was a fairly high degree of affective behavior; (2) many, somewhat irrelevant pupil comments and questions, and, (3) a fairly large amount of teacher contact with pupils -- both child created and teacher afforded.

The stimulated recall data for this lesson provided some examples which seem to be consistent with the three salient characteristics of teacher-pupil interaction.

1. A fairly high degree of affective behavior.

(Stimulated Recall Interview)

Excerpt 1:

Alex: I kind of laughed inside a bit too.

Excerpt 2:

Interviewer: That was a deliberate ...?

Alex: Brush-off, in a nice way. And you try to be pleasant about it.

(Post-lesson Interview)

Excerpt 3:

Alex: I really think that the principles that most teachers use are empathy. It's an empathy-based principle.

Excerpt 4:

Alex: I realize when I chastize pupils, I can imagine how he felt after this sort of thing, so I went and talked to him. I think that is the normal thing to do.

Excerpt 5:

Alex: I don't believe in Skinnerian tactics. I just don't like it. I think that it fits animals perfectly.

2. Many somewhat irrelevant pupil comments and questions.

(No relevant excerpts from interviews.)

3. A fairly large amount of teacher contact with pupils -- both child created and teacher afforded.

(Stimulated Recall Interview)

Excerpt 6:

Alex: Yes, I walk around a lot, circulate around to make sure that most people will start listening by the time I approach.

The two sources of data seem to be, at least, corroborative of each other. While the stimulated recall data are generally in line with the salient, observational data, the strongest evidence for congruence comes from the post-lesson interview data. Alex is a person who has a clear point of view about the importance of interpersonal relationships; interactive thoughts reflect this point of view, and there is behavioral evidence for the assertion that thought and action are related.

Case Study 2 -- B.J.

The dyadic interaction data from B.J.'s class indicated: (1) that a large number of product questions were asked, that most answers to these were correct and were simply affirmed by the teacher; (2) children in the class initiated a large number of procedural questions of the "What do we do next?" variety. The teacher dealt with such enquiries briefly, in approximately 50% of the cases.

Relevant excerpts from the interview data are as follows:

1. A large number of product questions with correct answers, affirmed by the teacher.

(Pre-lesson Interview)

Excerpt 1:

B.J.: The lesson is mainly just a comprehension lesson. My objective is to see how well they understand what they read.

(Stimulated Recall Interview)

Excerpt 2:

B.J.: Sometimes they will come up to me at the end of the day and say, "You never asked me to answer anything", so I'm making a conscious effort to get to everyone, they love to answer.

(Post-lesson Interview)

Excerpt 3:

Interviewer: And yet you did a lot of individual work there.

B.J.: That was just scraping the surface.

2. Children in the class initiated a large number of procedural questions.

(Stimulated Recall Interview)

Excerpt 4:

Interviewer: Now you were giving them specific directions

about how to just give that story a quick review, a quick skim; do you think the students understood what you meant?

B.J.: Not all of them.

Interviewer: Was it something you had used before?

B.J.: They have done skimming reports, just skimming for main ideas, for certain words they are looking for.

Excerpt 5:

Interviewer: Were you anticipating that they would immediately want help with the questions?

B.J.: Without giving themselves a chance.

Clearly, the nature of the teacher's main objective (i.e. to deal with comprehension) as indicated in the pre-lesson interview, was congruent with the observed data about a relatively large number of product questions. During the stimulated recall interview, the teacher commented about the limited experience pupils had in "skimming" a story, and indicated awareness and acceptance of the need for procedural questions. Indeed, the observational data show that there was a large number of such questions from pupils.

B.J.'s thoughts about the need to distribute questions rather widely so that a "conscious effort to get to everyone" was made, would seem to be congruent with the large number of product questions and correct answers.

The thoughts and comments of the teacher were, in general, congruent with the observed behavioral data.

Case Study 3 -- Chris

For Chris's classroom, the dyadic interaction data showed: (1) a large amount of child initiated interaction; (2) many call-outs; and, (3) many incorrect responses. The lesson was in grade 4 social studies, and was intended to be a review of material which had been "covered", in a previous lesson.

A number of interview excerpts which were relevant to the salient, observed behaviors were identified.

1. A large amount of child-initiated interaction.

(Stimulated Recall Interview)

Excerpt 1:

Chris: I've found this group of Grade 4's as a group of people are very clinging types.

Excerpt 2:

Chris: They are generally saying, what should I do about this or what should I do about that? They're what I call house-keeping questions.

Excerpt 3:

Chris: You know I would change positions first of all to kind of get away from this guy I consider to be nagging all the time.

2. Many call-outs.

(Stimulated Recall Interview)

Excerpt 4:

Chris: Oh kids that talk when I'm trying to talk. That really bugs the heck out of me.

Excerpt 5:

Chris: I'm probably one of the world's worst organizers.

3. Many incorrect responses.

(Stimulated Recall Interview)

Excerpt 1:

Chris: I'm sure their perception of me is that I don't give very complete instructions or something of that nature.

Excerpt 2:

Chris: You know the people who can use my help don't get my help because I'm always nagging some clown to finish this or finish that.

Excerpt 3:

Chris: Well I try and elicit as many different answers as I can. I think the student that thinks a little differently or perhaps goes with a little more detail should be given an opportunity to express themselves.

Note: The relevance of this latter excerpt to the "incorrect response" category needs to be explained. The dyadic observation system defines as "incorrect" a response which the teacher appears to treat as incorrect. In other words, if the teacher "asks another" without affirming the response, the coder might, in the middle of rapidly-occurring codable behaviors, be most inclined to code a response, which is followed by the teacher asking another pupil the same question, as incorrect.

In general, there is evidence to support the congruency hypothesis in Chris's case.

Case Study 4 -- Dale

The dyadic interaction data indicated that two main characteristics were salient in the overt behavior observed in Dale's classroom: (1) a large amount and variety of interaction, including a large amount of child-initiated interaction; and (2) a large quantity of management-related teacher behavior with negative affect.

From the pre-lesson interview and the stimulated recall interview a number of relevant statements were selected.

1. A large amount and variety of interaction including a large amount of child-initiated interaction.

(Pre-lesson Interview)

Excerpt 1:

Dale: One group comes up [to the desks], and one group will be doing some kind of paper work at their desk, and one group will probably finish their reading and their printing and go to the centres, and then after that it's just a matter of judging their own time. I call all the kids to come up at some time in groups of about six.

Excerpt 2:

Dale: ... Then I start calling them up individually for their individual conference and at that time they read orally to me by themselves ... and while that's going on, hopefully the rest of the class is doing either their seat work or practising their reading, continuing to do that or at a centre or a variety of centres.

(Stimulated Recall Interview)

Excerpt 3:

Dale: ... This was a speedier review ...

Excerpt 4:

Dale: He was asking a few questions about it. It was a kind of funny little story. I think he said something funny.

Excerpt 5:

Interviewer: You appear to be thinking about ten things at once then. Would that be right?

Dale: Probably, I was watching everybody. I was probably just watching them to see what they were doing at centres.

2. A large quantity of management-related teacher behavior with negative affect.

(Stimulated Recall Interview)

Excerpt 6:

Dale: The kids are yelling over the record player again. They sing along as they read out loud while they've got the earphones on. See even I'm talking loud even talking about it and they kept yelling anyway.

Excerpt 7:

Dale: I have a couple of kids that still simply can't sit and do it. They can't even sit and do a sheet of work, even a simple sheet without getting up and visiting or going over and checking somebody at a centre and things like that ...

Excerpt 8:

Dale: ... And when I said, at one point I said, "Brent, who are you saving it [a stool] from; no one's going to come and sit down?" And two seconds later he was jumping up on it himself.

Excerpt 9:

Dale: I was annoyed, that's all. It seems totally unnecessary and unfunny, and a waste of time that I should have to speak to them about something like that.

Excerpt 10:

Dale: I probably gave the impression of being impatient. I almost do that on purpose.

Excerpt 11:

Dale: It's a moment of individual closeness that would certainly

be felt. I doubt if any of them could voice it; but I'm sure, it's a, what do you call them, a warm fuzzy something like that. It's just for good feelings, for nice feelings.

Excerpt 12:

Dale: They know they're not supposed to come up and interrupt a conference unless it's an emergency.

The interview data generally provide explanations for the observed behavior. The incompatibility between the observed negative affect and the teacher's warm thoughts about pupils is explainable in terms of a deliberate conveying of an "impression of being impatient". The thought processes data are, in general, congruent with the observed behavioral data.

Discussion of the Findings

- Two main conclusions seem to be justified by the four case studies:
1. There is a fairly clear relationship between teacher thoughts and classroom behavior; and,
 2. Behavioral observation does not, by itself, provide a complete explanation of classroom processes.

Taken at face value, the data provided in each of the four case studies provide support for the first tentative conclusion, namely, that there is congruence between the dyadic interaction data and the data acquired through pre-lesson and stimulated recall interviews. However, a number of important methodological questions surround the analysis reported in earlier sections of this paper and a number of alternative research designs and techniques for data analysis might have been used to answer the same basic research question.

For example, one alternative procedure for data collection and analysis would be as follows:

The dyadic interaction system would be used to enable the experimenter to pre-select segments of the videotape upon which the stimulated recall interview might focus. Segments containing behaviors which are salient in terms of the dyadic system would provide a potentially more fruitful basis for obtaining thoughts, decisions, etc. which are relevant to the behavioral data source. The interview itself could become more focussed such that probing questions would be aimed at eliciting recollections of thoughts and behaviors which the dyadic system picks up.

The data analysis could also be modified by systematically varying the order in which the analyst examines the two data sources, by using two or more independent data analysts, and so on.

In summary, although the data reported above do support the first tentative conclusion, the design of the study was somewhat

flawed. What is needed in future studies of the same basic research question, is the kind of revision in data collection and analysis described above.

One should note, however, that there are problems inherent in the more structured approach insofar as it may lead, inevitably, to conclusions of congruence, by virtue of the fact that there is a forced-choice quality to the interview questions.

The second conclusion stems from the fact that each of the four case studies hangs together, that there is a sense of completeness, that one source of data complements the other, and that even when thoughts and behaviors were apparently incompatible (as in one excerpt from Dale's interview) there are important gains in the quality of information about the classroom. In effect, the teacher serves as a participant observer for whom the meaning of classroom interaction may be different than the meaning it has for an "objective" observer. Together, these two sources of data, as well as other data sources which one might use (e.g. the pupil's perspective) provide a more complete and more meaningful picture. One might argue that a principle of complementarity is at work here in that both act meaning (Kaplan, 1964) (through the retrospective data) and action meaning (through the dyadic interaction observations) are obtained from a single set of phenomena.

In their now classic work, Webb et al. (1966) said:

"We have argued strongly in this chapter for a conceptualization of method that demands multiple measurement of the same phenomena or comparison. Overreliance on questionnaires and interviews is dangerous because it does not give us enough points in conceptual space to triangulate."

The two sources of data used in this study and other "novel, sometimes 'oddball' methods" advocated by Webb et al. (1966) seem to be absolutely necessary if a complete portrayal of classroom life is to be attempted.

Possible Next Steps

Some possible next steps in the program of research of which this study was one small part are:

1. Implementation of the alternative methodologies for examination of the research question posed at the beginning of this paper.
2. Development of a somewhat detailed program of research which will lead from grounded theory into quasi-experimental, or stronger, research designs.

Conclusion

The work reported here is but one small move along what will almost inevitably, be a rather long path towards greater understanding of classroom life, including both overt and covert features. At best, this report may stimulate further inquiry using imaginative and innovative research designs.

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